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II. *A Letter written by Monsieur Blondel to a Friend, informing him of what passed in the last publick Assembly of the Academy Royal of Sciences at Paris, held Nov. 12. 1701. Communicated by Monsieur Geoffroy. F. R. S.*

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I Have endeavoured what I could to satisfy your commendable Curiosity touching the points of Knowledge, treated of in the last publick Assembly of the *Academy Royal of Sciences at Paris*, and strove to recal to mind as much as was possible, the principal matters faithfully. Yet if there should happen any mistake in what I write, let it be attributed to me. You know we have not to great a command of the Memory, as to be assured to fail in nothing, how great soever the care be; especially in matters so sublime as those to which the Learned of this *Academy* apply themselves. Sometimes even the too great desire to retain all is an hindrance to the vivacity of the Memory: Every thing is fine, every thing worthy to be remembered, yet we cannot retain all, so that one is under a great concern to omit nothing considerable. This I have found true in my self, and must be excused if I have committed some mistakes, and you have too much goodness not to receive it, as an excuse.

Monsieur *Cassini* opened the *Assembly* with a Discourse containing the Observations he had made in his last Voyage, with a design to determine the passage of a Meridian Line (taken from a point in the *Observatory at Paris*) from one end of *France* to the other. In the first part of

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this discourse he went back to the most ancient Astronomers, and recounted their opinions of the Spherick Figure of the Earth, and their methods to know its dimension, of which the two most famous are, first, that of *Eratosthenes* the *Cyrenian*, who lived in the Reign of *Ptolomie* *Evergetes* King of *Aegypt* : The second that of *Possidonius* of *Rhodes*, who lived in the time of *Pompey* the Great. After having enlarged on the Methods used by these two Ancient Philosophers, he proceeded to those of the Moderns, *Johannes Fernelius*, and some others : And in the last place he related the method of the late Monsieur *Picard*, of the *Academy Royal*, as the most exact. Then he spoke of his own Observations on the same subject, of the use he had made of the *Satellites* of *Jupiter*, more fit for this than the Eclipses of the Moon, in that they are more frequent ; and said that his Observations had been confirmed by the like made in *China*. He shewed the method he took to determine the passage of the *Meridian* taken from a point in the observatory at *Paris*. By the means of *Triangles* which he made through the whole course of his Journey, and very exact calculations, he determined the place of this *Meridian*, and marked all the considerable places thro which it passed, from *Paris* to the highest Mountains of the *Pyreneans*, which separate *Roussillon* from *Catalonia* ; among these Mountains he observed one of a prodigious height, it being 1440 Toises high. But the most extraordinary Observation was that of the inequality of the degrees of the *Meridian* on the Earth ; which is such, that Monsieur *Cassini* found that going Southward one degree surpassed another an 800th part, which may give great reason to doubt of the exact roundness of the Earth. Upon this occasion he reported two different opinions : the one Monsieurs *Huygens* and *Newton*, the other of a Mathematician of *Strasbourg* named *Eisenschmidius*. The two former hold that the Earth is flattened towards the Poles, so that it is something of the

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shape of an *Holland Cheese*: which they both conclude by Physical and Algebraical deductions, from an Observation made at *Cape-Verd*; that the Pendulums, tho of the same length, make their Vibrations there much slower than in the Northern Countries: The other Mathematician holds that the figure of the Earth is Elliptique, so that it is stretcht out toward the Poles, and has the form of an Egg. *Monsieur Cassini* left the Question undecided. The Cities thro which he observed the *Meridian of Paris* to pass, are *Dunkirk, Amiens, Aubigny, Bourges, Aurillac, Rodez, Alby, and Carcassone*. *Monsieur L' Abbe Bignon*, who at the end of every discourse made a recapitulation of it, so exact and true, that the Author himself could not give a more faithful extract, said, that the *Meridian of Paris* would be observed round the whole World with the same exactness as had been already began to be done from one end of *France* to the other; and that there were persons of Courage sufficient to enterprize so painful a Voyage; and that nothing hindered them but the War, which now began to be kindled every where. He meant by this Person (as he explained himself at the end of the Assembly) *Monsieur de Chafel*, Associate of the *Academy Royal*, and Professor of *Hydrography* at *Marseilles*, who having already made several Voyages in the *Mediterranean*, in quality of the Kings Engineer, and collected many Observations, is now busied in making a very true and exact Cart thereof, wherein he will set down the Anchorages and the least Particularities.

The next of the Academy that spoke was *Monsieur Bolduc*. He examined the Principles of Purgatives, and began with *Ipecacuanha*, which he said he had endeavoured to sweeten and qualifie, by trying to take away its too great *Emetic* power. He assured, that how violent soever *Ipecacuanha* be, yet it is not so dangerous as *Scamony* or *Coloquintida*, which always leave Gripes, and sometimes *Dysenteries*; whereas *Ipecacuanha* leaves only a gentle astriction after it. He

said next, that he having observ'd that the *Emetick* force of this Root consists in its *Resinous* parts, he had found out a way to take them from it, and to leave only the *Saline* parts; that he made use of Spirit of Wine to extract the one, and of Rain-water distilled to draw off the other; that he had afterwards given with very good success in Dysenteries this *Ipecacuanba* so despoiled of its *Resinous* parts. From *Ipecacuanba* he passed to *Hellebore*, which is another Violent *Emetique*; which he distinguish'd into two sorts, the Black and the White. He said, that ours was not different from that of the Antients; that the White caus'd mortal Convulsions, for which reason it was not used, and that he had never made any attempts with it. As for the black *Hellebore* it is to be observed, that that which comes by the way of *England* is much weaker than that which grows on the Mountains of *Switzerland*; which may well have been the reason that Physicians have neglected this Remedy, then he related his operations on this Root. He said, that having put it in a retort in a Reveberatory Fire, he at first drew off an Acid Spirit, next an Oily Acid Spirit; thirdly a violent *alkali* Spirit came over, mixt with Oyl of *Tartar*, and lastly a fetid Oyl. That from the *Caput mortuum* he had by a *Lixivium*, a fixt Salt, which fermented with Acids, such as all other Plants give; besides these Operations, he drew an *Extract* of this Root with Spirit of Wine to get the *Resinous* parts, and with distilled Rain Water for the *Saline*. He got but very few of the former, but a great deal of the other; so that he found that Spirit of Wine was useless in this case. Comparing then the Effects of these Purgatives, he said that the purely *Resinous* purge little, and with much irritation; that the purely *Saline* purge only by Urine, but that both joyn'd together purge very well. That it is for this reason that Physicians make use of Salt of *Tartar*, to correct the bad Effects of *Resinous* Purgatives; but if this Precaution were used, to make the

extract with *aqueous* dissolvents instead of the *sulphureous*, there would be no need of that Corrective.

*Monsieur Morin*, who spoke thirdly, offer'd a particular project of a new *Système* for the passage of the Drink and Urine. He said, that having observed the extreme swiftness with which the drink passes sometimes, as they find that drink *medicinal* Waters, he thence conjectured that it did not always go the way, which *Anatomy* shews us it takes ordinarily; and that therefore it ought to have another shorter passage which is not yet discovered. A strong proof of this his conjecture is, that those who purge with an infusion of *Cassia* render in a very short time by Urine, a Tincture as black almost as the infusion they have taken; which would not constantly happen, if the drink took always the ordinary way. He then took pains to discover this unknown passage for the Urine, and he persuades himself that he has found it. To make his *System* He did not pretend to give this System as new, but as explained more exactly, and in some manner demonstrated by the Experiments which he reported. the better apprehended, he began with the explication of the use of the Drink, which is to help the digestion, and to serve for a *vehicle* to the *chyle*: He said, that the Urine is nothing else but the Drink itself, which having served for this purpose is afterwards cast out more or less loaded, that those who drink much without eating, as when they take the Waters, render their Urine very suddenly, and that without colour. On the contrary, they that drink little and eat much, renders theirs slower and high coloured; and lastly, they who both eat and drink very much, render theirs at first, one part less coloured, and afterwards another part high coloured later.

From whence, and from what he had before said, he infer'd, that the Drink besides the ordinary passage, which it has to the Bladder by the *emulgent Veins Kidneys*, and *Ureters*, has likewise another by the Pores of the Stomach, and of the Bladder. He called those the first *Urines* which pass by this new way, and the second *Urines* those that pass the ordinary way. He afterwards proved the possibility

bility of this new *System* by Experiments. He said, that having taken the *Ventricle* and *Bladder* out of a dead Body, and filled them with Water, it run all out through the Pores; and turning them inside outwards, the Water that was put in them run thro' after the same manner; and that lastly, letting them swim in Water, it easily soaked thro' into them. From which he concludes that in a living Body, it ought to pass with much greater facility by the *Tension* of the *Stomach*, for the *aliment* like a Sponge soaks up the *Liquor*, in which it swims, and so swells up the *Stomach*, which in its turn again pressing the Food; squeezes out the *Liquor* from it, and forces it to filter thro' its Pores. With this pression it is easy to conceive, that the Drink must pass easier thro' the Pores of the *Stomach* than the Water, which was put into the *Stomach* taken out of a Dead Body; and that this *Liquor* re-entering into the *Bladder* makes the first *Urine*: it is evident likewise, that this pression is never strong enough to press out all the *Liquor* from the *Stomach*, and so there remains enough to carry on the *Aliment* and *Chyle*, after which it comes away high loaded and coloured, and makes what he calls the second *Urines*. He added, that the passage of the Drink into the capacity of the lower Belly did not cause the *Drop-sie*, because that *Liquor* aided by the pressure of the parts that encompass it, finds an easie entrance into the *Bladder*, and none into the *intestines*, because of the thick *Mucus* that lines them. The easiness of this passage is the cause that *mineral Waters* run away so suddenly by the first ways, and by the second; but much more by the first, when there is but little nourishment in the *Stomach*; for there runs more or less *Urine* by the first ways than by the second in proportion to the *aliment* taken, and to the Surplus of what is necessary for the digestion, respect being had likewise to what passes insensibly by transpiration.

Thy *System* being so laid down, he gave the Reasons of two considerable *Phænomena*.

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The first was that the different *Colour* of *Urine* that is made at different times, he said, this came from hence; that those that pass by the first ways, little charged, whereas the other, that pass by the second ways, having served for a *Vehicle* to the *Chyle*, and circulated with the mass of the Blood, are charged with the *Volatile* and *Sulphurous Salts* and other excrements of the Blood, and consequently more coloured.

The second *Phenomenon*, was the *Red, Greenish* and sometimes *blackish* colour of the *Urine* of those that are purg'd with the infusion of *Cassia*. This, according to him is because that Tincture passes by the first ways, as was experimented in the *Stomach* of a dead man, where this Liquor passes indeed more slowly, and in less quantity, but always of a *Greenish Red*. It is the same of the *Red Tincture* of the *Urine* after eating *Beets*, of the *Violet-brown*, which is observed after Drinking *Mineral waters*; of the *smell* of *Violets* after the taking Pills of *Turpentine*, and of the strong smell after *asparagus*, all which comes from the first *Urines* being charged with that colour and smell, which is not taken away by any thing that's mixt with it, whereas the second *Urine* which carries the *Chyle* and *Aliments* has no other colour nor smell than *Urine* ordinarily has, he advertised at last that he had spoken only in general, and without mentioning the exceptions; and that he was ready to quit this opinion, whenever good reasons were given against it.

In the end *Monsieur Marchand* closed the *Assembly* with the Lecture of a discourse of a discovery of a new *Simple*, he began with enumerating the advantages Modern *Botanists* have above the *Ancient*, in regard the *later* in the space of so many Ages discovered at most not above 6000 Plants, and the *former* in this last Age, have found out at least 4000 and among others excellent *Specificques* as *Ipecacuanha*, *Jesuits Bark*, &c. Whereas the *Ancients* knew only some bad *Purgatives* such as *Scamony* and *Hellebore*.

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The Plant of which *Monsieur Marchand* spake is none of the least curious Discoveries that has been made of this nature. The first that brought it into reputation was a *Portuguese Surgeon*, who having lived many years in *Brazil* discovered the Virtues of this Plant, after returning into *Portugal* with a design to raise a great Trade with it, he sent several *Specimens* of it every where. He called the Plant *Iquetaia*, and attributed to it no less Virtues than the cure of *Apoplexys*, *Pleurisies* and *Intermitting Fevers*. He added one thing, which tho' more particular, yet seemed more probable, which was, that the Leaves infus'd with *Senna* took from it, its disagreeable taste and smell without altering any thing of its *Purgative* quality. The *Samples* that he sent were not in sufficient quantity to make experiment on the Distillers, he said, it was proper for ; but there was enough to try whether they had the virtue to correct the taste and smell of *Senna*. Therefore there was infus'd two *Drames* of it with as much *Senna* in a *Chopine* of Water, and the experiment confirmed the matter of fact, being desirous to know what *Species* of Plant it was, and it being impossible to discover it by the Leaves the *Portuguese Surgeon* had taken so much care to cut them very small. *Monsieur Homberg*, who had some of it sent him, perceived some Seeds swimming on the Water, in which they were infus'd, and taking up as many as he could of these Seeds, gave them to *Monsieur Marchand*, who sowed them, from whence grew up a Plant, which (God be thanked) we need not go to *Brazil* to seek, it grows in *Europe*, nor need we go out of *France* to find it ; nay, more, we may have it all round *Paris* ; 'tis the *Scrophularia aquatica*. To be the more certain of it, there was some of our *Scrophularia* sowed on a Bed, and some of the other seed on another, and there was observed but some small differences, which may be well attributed to the different Culture and Soil. There was likewise tryed the Vertue of our *Scrophularia*, and it was found to have the same effect, in taking  
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away the taste and smell of *Senna*. *Monsieur Marchand* concluded from this discovery, that it was more fit to labour to know the Remedies that are in our own Land, than to run over all the Earth in quest of that, with much labour and charge, which we may have for nothing at home, if we took the pains to search. He added, that a knowing *Botanist* after many long Travels avowed, that there might be found in all Countries Remedies for all Diseases, and that having apply'd himself to this matter, he had discovered a good number of Simples commonly to be found, that had great Virtues, of which he had graved the Plates. He named among others the *Achillea Montana Penæ*, which smoaked in a Pipe as *Tobacco*, considerably eases an *Asthma*. This skillful *Botanist* he mentioned, was the late *Monsieur Marchand*, his Father, whom out of modesty he would not name; but whom *Monsieur l'Abbe Bignon*, out of the great Love he bears to Learning and Learned Men, named with much respect and commendation. He finisht his Discourse, with advice to *Physicians*, to apply themselves to the knowledge of what grows in their own Countries, before they think of going farther; he said they ought to neglect nothing, and that they should rake even in the excrements of Animals, thence to get Remedies for Diseases, after the Example of *Rulandus* the famous *Physician* of *Ratisbonne*, who made a particular *Pharmacopæia*, wherein all the Compositions are different preparations of *Excrements*.